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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,574	11/25/2003	Scan Zhao-an Zhang	5649-2239	5789
20792 7590 02/02/2009 MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627				
EXAMINER HALEY, JOSEPH R				
ART UNIT 2627		PAPER NUMBER		
MAIL DATE 02/02/2009		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/721,574

Applicant(s)

ZHANG ET AL.

Examiner

JOSEPH HALEY

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-26 is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-13 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 14-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6, 12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gemma et al. (6125095) in view of Berner et al. (US 6947311)

In regard to claims 1, and 16 Gemma et al. teaches an information-storage medium that can be locally and reversibly switched between at least two optical states by application of electrical fields (figs. 3 and 4 and column 3 lines 1-7); and an information-storage-layer-optical-state detection means that detects and reports the optical states of regions of the information-storage medium (fig. 7 element 35) but does not teach rotatable molecular components.

Berner et al. teaches rotatable molecular components (figs. 4, 6 and 7).

The two are analogous art because they all deal with the same field of invention of recording media.

At the time of invention it would have been obvious to one of ordinary skill in the art to provide the apparatus of Gemma et al. with rotatable molecular components. The rationale is as follows: At the time of invention it would have been obvious to provide the apparatus of Gemma et al. with rotatable molecular components because of the broad range of materials that could be used.

In regard to claim 2, Gemma et al. teaches a detector layer within the information-storage medium that responds differently to an interrogating signal depending on the optical state of the information-storage medium (element 3); and a read/write device that applies the interrogating signal to regions of the information-storage medium and generates a reporting signal based on a response of the detector layer (element 32).

In regard to claim 6, Gemma et al. teaches an information-storage medium that includes an information-storage layer that can be locally and reversibly switched between at least two optical states by application of electrical fields (figs. 3 and 4 and column 3 lines 1-7); a detector layer within the information-storage medium that can detect whether or not an applied electromagnetic radiation beam is transmitted through the information-storage medium at different positions of the information-storage medium (fig. 4 element 4); and a read/write device that applies electrical fields to write information into the information-storage layer and that applies electromagnetic-radiation beams in order to read information stored in the information-storage layer (fig. 7 element 35).

Berner et al. teaches rotatable molecular components (figs. 4, 6 and 7).

In regard to claim 12, Gemma et al. teaches a method for storing a bit of information, the method comprising providing an optoelectronic memory device that includes an information-storage medium with an information-storage layer that can be locally and reversibly switched between at least two optical states by application of electrical fields and that includes a detector layer within the information-storage medium

that can detect whether or not an applied electromagnetic radiation beam is transmitted through the information-storage medium at different positions of the information-storage medium (figs. 3 and 4 and column 3 lines 1-7); when the bit of information has a first binary value, applying an electrical field of a first polarity to a small region of the first, information-storage layer to induce the first optical state within that region (fig. 4); and when the bit of information has a second binary value, an electrical field of a second polarity to the small region of the first, information-storage layer to induce the second optical state within that region (column 29 lines 9-13. By erasing the data with the opposite polarity, Gemma et al. creates the opposite data bit).

Berner et al. teaches rotatable molecular components (figs. 4, 6 and 7).

In regard to claim 17, Gemma et al. teaches a detector layer within the information-storage medium that responds differently to an interrogating signal depending on the optical state of the information-storage medium (fig. 4 element 4); and a read/write device that applies the interrogating signal to regions of the information-storage medium and generates a reporting signal based on a response of the detector layer (fig. 7 element 35).

In regard to claims 3 and 18, Gemma et al. teaches wherein the detector layer responds to an electromagnetic-radiation-based interrogation signal that is transmitted through the information-storage medium, when the information-storage medium is in a first optical state, and that is not transmitted through the information-storage medium, when the information-storage medium is in a second optical state (column 10 lines 42-65. Gemma et al. teaches the detector layer becoming luminescent when absorbing the

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interrogation signal for the 0 data bit and passing through the interrogation signal when there is a 1 data bit).

Claims 4, 5, 10, 11, 13, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gemma et al. in view of Berner et al. further considered with Gemma et al.

In regard to claims 4, 5, 13, 19 and 20 Gemma et al. and Berner et al. teach all the elements of claim 4, 5, 13, 19 and 20 except wherein the detector layer responds to an electromagnetic-radiation-based interrogation signal that is transmitted through the information-storage medium by generating an electric current .

Gibson et al. teaches wherein the detector layer responds to an electromagnetic-radiation-based interrogation signal that is transmitted through the information-storage medium by generating an electric current (column 8 lines 17-22).

The three are analogous art because they all with the same field of invention of recording on an information media.

At the time of invention it would have been obvious to one of ordinary skill in the art to provide the apparatus of Gemma et al. and Berner et al. with the electric currents of Gibson et al. The rationale is as follows: the time of invention it would have been obvious to provide the apparatus of Gemma et al. and Berner et al. with the electric currents of Gibson et al. because it would creates a large data signal.

In regard to claim 10, Gemma et al. teaches a first, information-storage layer comprising a two-dimensional optical state-change organic-polymer film that can be locally, stably, and reversibly switched between a first optical state that absorbs or

reflects electromagnetic radiation of a particular frequency and a second optical state that is transparent to electromagnetic radiation of the particular frequency (fig. 6 element 3); a second, electrode layer that is transparent to electromagnetic radiation of the particular frequency (element 5) but does not teach a photodiode detector layer that, when illuminated by electromagnetic radiation of the particular frequency, generates a current.

Gibson et al. teaches a photodiode detector layer that, when illuminated by electromagnetic radiation of the particular frequency, generates a current (column 8 lines 17-22).

In regard to claim 11, see claims 4, 5, 13, 19 and 20 rejection above.

Allowable Subject Matter

Claims 21-26 are allowed.

Claims 7-9 and 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH HALEY whose telephone number is (571)272-0574. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph H. Feild/
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